

figure in woodcut, which represents both forms  $\times 210$  diam.). Such agrees closely with examples from the Channel Islands, the Hebrides, and other parts. An imperfect specimen from the stomach of a haddock diverges very considerably in the form of its anchor-plates (woodcut, larger figure), since the whole plate is much larger, and there are generally seven apertures round the central, instead of six as in the former case; while the slits in the smaller end (to which the anchor is attached) are much more numerous and linear. Various abnormal anchors occur in *S. inhærens*, such as one with five flukes (a bifid process on the summit, a bifid fluke and a normal serrated fluke), or an anchor with several processes on the stalk.

[To be continued.]

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#### BIBLIOGRAPHICAL NOTICE.

*A History of British Quadrupeds, including the Cetacea.* By THOMAS BELL, F.R.S., F.L.S., F.Z.S., F.G.S., &c. Second Edition, revised and partly rewritten by the Author, assisted by ROBERT F. TOMES, Corr. Memb. Z.S., and EDWARD RICHARD ALSTON, F.Z.S. London: Van Voorst, 1874.

THIS long-expected volume, which enterprise, science, and art have alike combined to render attractive, has at last issued from the press; and we heartily welcome its appearance. Of the beautiful series of works on British zoology which bear on their titlepages the name of its spirited publisher, few are likely to become so popular. Less bulky than its predecessor of five-and-thirty years ago, it possesses yet stronger claims to our admiration: the species and numerous varieties of our domestic animals have been wisely eliminated, and none but *feræ nature* of the British Islands now find a place within its pages.

From our previous acquaintance with the productions of the accomplished author, no less than from the qualifications of those who have rendered him assistance on the present occasion, we were, of course, prepared to meet with much that would be appreciated by the scientific, and that would prove interesting to the general reader: nor have we been disappointed. For many years it has been no secret that the delay in the appearance of this edition could not justly be attributed either to the author or his publisher. His change of residence from London, "the centre of literary and scientific society and information," to the classic and appropriate home of Selborne (the Mecca of field-naturalists), and other circumstances over which he had no control, induced him to call in the aid of two gentlemen, which is duly acknowledged on the titlepage, each of them fully qualified to impart the most recent information in the particular department to which his attention had been especially directed; but, as we are told in the Preface, "the dilatory manner

in which, in one case, this assistance was bestowed, caused extreme uneasiness to both author and publisher, and occasioned the lamented delay." However, "All's well that ends well;" and we believe we are correct in saying that, although the charming introductory chapter to the history of the *Vespertilionidæ* appears almost in its original form, yet the greater part of what is new and interesting in the subsequent account of that hitherto little-known family has been contributed by the peccant coadjutor.

Those who are desirous of paying especial attention to the study of British bats will be grateful for the lucid arrangement of certain obscure groups, which until now have been frequently confounded. For example, the shape of the ear and tragus, and the relative proportions of the ear to the tragus and to the head, as well as the dentition, were formerly employed to point out two distinct divisions of the simple-nosed species (the formula of dentition and the shape and structure of the tragus combining to prove the correctness of this view); but, besides these well-known characters, the separation in the present edition of the old genus *Vespertilio* from *Scotophilus*, the arrangement of the former into two groups, and the latter into three (the distinguishing characters of which are principally obtained from the extent of the wing-membranes, reaching in some to the base of the toes, and in others only to the distal extremity of the tibia, leaving the foot free), appear to us equally justifiable and ingenious, while the author has happily avoided the too common error (*sin* we were almost about to say) of elevating these "groups" to the rank of subgenera. Many a youthful aspirant, indeed, has been deterred from prosecuting the scientific study of Natural History by the Babel of modern nomenclature. It should never be forgotten that species alone exist in nature; and the student is frequently lost in a labyrinth of genera and subgenera which are a mystery to him, but in the manufacture of which the mere closet-naturalist finds his chief delight.

We observe the same laudable disinclination to admit, or fabricate, a new species without anatomical evidence, in the account of the otter (*Lutra vulgaris*). In the Museum of the Zoological Society of London there is a specimen of an otter that was killed in Ireland; and we are told that the gentleman who presented it "has long considered the Irish otter as constituting a distinct species from that of England," on account of the intensity of its colouring, which approaches nearly to black, both on the under and upper surface, and a presumed difference in the size of the ears, and the peculiarity of its habits and manners, "being a more marine animal, and constantly betaking itself to the sea when alarmed or hunted." Now we have killed many otters in Ireland, both in inland rivers and in estuaries on the coast, and can corroborate the accuracy of this account as to their fondness for salt water and salmon (quite sufficient to account for their greater size as compared with their ill-fed representatives in this country); but we do not believe that there is any difference in the dimensions of the ears; and as to the colour of the skin, although generally of a much darker hue than that of

English examples, yet we possess in our own collection a beautiful specimen taken in the river Rother, in Sussex, a few years ago, whose fur is still as dark as that of any otter we ever met with in Ireland. But one species of *Lutra* can be recognized as a denizen of the British Islands.

We are reluctantly compelled to point out an error as regards the geographical distribution of the hedgehog\* (*Erinaceus europæus*). "The hedgehog," our author says, "has not hitherto, so far as we know, been met with in Ireland." Now we can state, from our own experience, that it is generally distributed there; but if he had applied this remark to a different animal, the weasel (*Mustela vulgaris*), though not quite correct, he would have been nearer the truth. The stoat (*Mustela erminea*) is common in Ireland, where it never becomes white during the winter; and the term "weasel" is always applied to it and not to its lesser congener, which, in all probability, is now extinct. During our early youth, about the year 1824, in the far west of Ireland (county of Mayo) we once saw a weasel run across a road and take refuge under a heap of stones. Its diminutive proportions and short tail at once attracted our attention; and summoning to our assistance some men who were engaged in repairing a wall, the stones were removed, one by one, until at last the little animal made its appearance, and was quickly despatched. Bewick's 'Quadrupeds' was then a familiar book with us; and the admirable figure of the weasel, with which the specimen precisely corresponded, removed all doubt as to the species. Like "The Last of the Mohicans," it was probably the ultimate representative of its race. Such, indeed, was the opinion of the late Mr. Thompson of Belfast, to whom we related the incident several years afterwards. At any rate our subsequent exertions to procure another example of the true weasel proved fruitless; nor have we ever succeeded in obtaining a recent specimen in that country, or met with others who have been more successful than ourselves.

*A propos* of Ireland, we are glad to find that the so-called Irish hare (*Lepus hibernicus* of the first edition) has been rejected as a species, and now finds its true place as a geographical variety of the mountain hare (*Lepus variabilis*), so common in the hilly parts of Scotland. In the comparatively mild climate of Ireland this animal, like the stoat, does not become white in winter, a circumstance which probably first induced the late Mr. Yarrell to suggest that it should be specifically distinguished, as the osteological differences are really unimportant. But even when transported to the south of England the Irish hare will change colour during severe seasons, as we can assert from personal experience. About the year 1850 the late Lord Mayo sent fourteen to the late Lord Leconfield, who turned them down in Petworth Park, one of the finest in England, surrounded by a lofty wall of more than twelve miles circumference. Here they increased rapidly, being much more prolific than the

\* This mistake has since been corrected in an erratum slip.

common hare (*Lepus timidus*), which also abounded in the same woods and plantations. Pied examples of the former were of common occurrence every year, in the months of January and February; and during the exceptionally severe winter of 1860 we ourselves shot one that was perfectly white, and it is now in our collection. In juxtaposition is a Scotch specimen from Banffshire, exhibiting the same snowy livery. We fully coincide in our author's remark that "the assertion of Von Tschudi that mules between *Lepus timidus* and *Lepus variabilis* are often met with in Switzerland is a statement which seems to require further confirmation." Not a single example of such a hybrid has ever been met with in Petworth Park.

The vexed question as to whether the ferret (*Mustela furio*) is specifically distinct from the polecat (*M. putorius*) receives but little light in the volume before us. It is admitted to be "impossible to point out any constant anatomical distinction between the animals, and they are said to breed freely with one another; on the other hand, the intolerance of cold of the ferret has been considered as evidence of its having been derived from an original stock brought from Africa or some other tropical land." In accordance with this latter belief in the exotic origin of the ferret, his portrait and biography are consistently excluded from the pages of this edition.

Mr. Colquhoun, the well-known author of 'The Moor and the Loch,' in his 'Lecture on the *Feræ Naturæ* of the British Islands,' expresses his belief that the dark ferrets so common in every rat-catcher's hutch owe their dusky hue to polecat parentage. He says, "Dark ferrets exactly resemble fougarts, only they are smaller and of lighter shade. Many of these brown ferrets are half polecats; in fact the polecat is just a wild ferret." Now, if these "dark ferrets" were ascertained to be prolific *inter se*, the identity of the two supposed species would be proved. As we formerly observed in our notice of Mr. Colquhoun's lecture\*, "Surely this *questio vexata* might easily be decided by experiment."

"There is no rule," it is said, "without an exception;" and that which our author and his assistants have so laudably and generally observed, of excluding our domestic and semidomesticated animals, appears to us to have been transgressed in a single instance—that of the fallow deer (*Cervus dama*), which was originally an inhabitant of Asia Minor and countries bordering the Mediterranean, and therefore seems hardly to deserve a place among the *feræ naturæ* of the British Islands, to which the red deer (*Cervus elaphus*) and the roe (*C. capreolus*) are of course entitled. We believe that the new illustration of the former, in this edition, is from the gifted pencil of the greatest zoological artist now living, whose well-known portraits of living animals are beyond all praise. We sincerely wish, however, that he had not, in a facetious moment, stuck such an abnormal pair of antlers on his stag. Horns of this fantastic, semi-palmated character, though met with in continental collections, are not typical of the species, are rare in the Scottish forests; and the

\* Ann. & Mag. Nat. Hist. 1873, xi. p. 382.

figure in the first edition, with the characteristic tripods crowning the antlers, although inferior in every other respect, gives a more correct representation of the animal's usual appearance.

Perhaps no portion of the work exhibits more favourably the advance of zoological knowledge during the last thirty years than that which comprises the orders Pinnipedia and Cetacea, popularly known as Seals and Whales. The true seals (or *Phocidæ*), with the walrus (*Trichecus*), the only representative of its genus, and the eared seals (*Otaridæ*) are comprised in the former order. We have no British representative of the last-named family; but the walrus, an arctic animal, which has occasionally been killed on the northern coasts of Scotland, in some respects constitutes a link between them and the true seals, agreeing with the latter in its general anatomy, and with the former in the peculiar mode of using its limbs when on land. This is so well described by our author that we are tempted to quote the passage.

“Instead of resting on its belly and progressing by the action of its abdominal muscles, as we have seen to be the case with the true Seals, the walrus walks upright, though in an awkward and shuffling manner, the fore paws being turned backwards, while the hind feet are directed forwards and outwards. In its motions in swimming also it holds an equally intermediate position; for while the fore feet are hardly used by the true Seals, and are the main organ of propulsion in the *Otaridæ*, all four limbs are employed by the walrus; as Dr. Pettigrew remarks, ‘so far as the physiology of its extremities is concerned, it may very properly be regarded as holding an intermediate position between the Seals on the one hand and the Sea-bears and Sea-lions on the other.’” (Page 270.)

We recommend such of our readers as take an interest in this subject to pay an early visit to the Zoological Gardens in the Regent's Park, where they will find the accuracy of the above account (as regards the different modes of progression, when on land, exhibited by the true seals and the sea-lions) verified by ocular demonstration. Two living members of the *Otaridæ* are now to be seen in the seal-pond, the sea-lion (*Otaria jubata*) and a smaller species (*O. pusilla*), both natives of the southern hemisphere—the former from the Falkland Islands, the latter from the Cape of Good Hope. Their intelligent and obliging keeper, François Lecomte, for whom they exhibit the strongest affection, has succeeded in so thoroughly domesticating them, as well as others of the common British species, that they come on shore when summoned by his whistle, walk along a plank that extends into the centre of the pond, and clamber up into two chairs purposely placed at the further extremity for their reception. Nay, we have even seen the sea-lion follow Lecomte into an adjacent building furnished with a sliding door, and on the latter coming out and shutting it, remain perfectly quiet inside until ordered by him to open it for himself, a feat which he performed with facility and expedition.

We may here mention that a living example of that extraordinary animal the hooded seal (*Cystophora cristata*) has been lately added

to the Society's collection, and occupies a smaller pond by himself. This species, having occurred twice in the British Islands, of course finds a place in the volume before us.

It is greatly to be regretted that the annual persecution of the interesting and intelligent family of *Phocidæ* has reduced its numbers so sensibly, even on the coasts of Scotland, that in process of time its members will, in all probability, become as scarce as the walrus. In the British Islands, as our author remarks, seals are hardly plentiful enough to be of more than local importance; but

“It is very different in the far north, where vast herds of *Ph. grænländica*, *Ph. barbata*, and *Cystophora cristata* assemble in spring on the ice of the Greenland and Spitzbergen seas, as well as in Davis's Straits and around Newfoundland. Every spring a large fleet of European vessels sails northwards, and coasts along the southern margin of the ice-fields till the seals are met with, when the hunters endeavour to cut off their retreat to the open water, and then despatch them with heavy clubs. The numbers thus destroyed are very great; Dr. R. Brown estimates the value of those killed in the Greenland seas alone at about £116,000 (Proc. Zool. Soc. 1868, p. 439). It appears inevitable, as Dr. Brown remarks, that such indiscriminate slaughter must soon greatly diminish the numbers of the northern seals, and eventually destroy the value of the fishery.”

To many, who have never paid any attention to natural history, the admission of the order Cetacea (in which are included the British Whales, Dolphins, and Porpoises) into this volume would appear, at first sight, erroneous and absurd; but this subject is so lucidly explained in the admirable introduction to the order Cetacea, that we must quote our author's own words:—

“The outward appearance of the Cetaceans, organized as they are for a permanent residence in the ocean, resembles so nearly that of fishes that they have been arranged together by the ancients and by the ignorant. Ray himself was not prepared to separate them; and even the example of the great Linnæus, who, with his wonted correctness and judgment, placed the Whales in their true position, was not sufficient to counterbalance the prejudices of Pennant, who regarded the Cetacea as forming a division of the class of Fishes, although he was well aware that they bring forth their young alive, and nourish them by means of mammary organs, similarly constructed to those of the whole class of Mammalia. Their true position, however, being established, it becomes a matter of great interest to ascertain what relation the other organs of the body bear to the corresponding ones in the other groups of this class, and by what modifications of structure they are rendered subservient to a mode of life so different from that of the more typical forms. A brief notice of the principal points of their organization, so far as they bear on these apparent anomalies, will show that the important variations in form and habits are provided for by the modification of the structures which are essentially the type of the class, rather than by their abolition and the production of new organs.”

Our space will not permit us to indulge in further quotations from this interesting portion of the volume; but our readers can form some idea of the research and labour that have been employed when we say that no less than ten species of the order Cetacea have been added to the British list; and although the illustration of *Ziphius cavirostris* at page 428 exhibits an impossible tail (being vertical instead of horizontal), yet the woodcuts and vignettes throughout the volume are really beautiful as works of art, while the literary and scientific portion is well worthy of the distinguished naturalist to whom, principally, we are indebted for this valuable contribution to the zoology of the British Islands.

PROCEEDINGS OF LEARNED SOCIETIES.

ROYAL SOCIETY.

March 12, 1874.—Joseph Dalton Hooker, C.B., President, in the Chair.

“Contributions to the Developmental History of the Mollusca. Sections I., II., III., IV.” By E. RAY LANKESTER, M.A., Fellow of Exeter College, Oxford.

Section I. *The ovarian Egg and early development of Loligo.*

The points of greatest interest to which the author draws attention in the present memoir are:—

1. The explanation of the basketwork structure of the surface of the ovarian egg by the plication of the inner egg-capsule.
2. The increase of the yolk by the inception of cells proliferated from the inner egg-capsule.
3. The homogeneous condition of the egg at fertilization.
4. The limitation of yolk-cleavage to the cleavage-patch.
5. The occurrence of independently formed corpuscles (the autoplasts) which take part in the formation of the blastoderm.
6. The primitive eye-chamber, formed by the rising up of an oval wall and its growing together so as to form a roof to the chamber.
7. The origin of the otocysts by invagination.
8. The rhythmic contractility of a part of the wall of the yolk-sac.
9. The disappearance of the primitive mouth, and the development of a secondary mouth.
10. The development of a pair of large nerve-ganglia by invagination of the epiblast immediately below the primitive eye-chambers.